



November 17, 2016

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Notice of Ex Parte Communication, ET Docket Nos. 16-56, 14-165; GN Docket No. 12-268

Dear Ms. Dortch:

On November 16, 2016, Alison Neplokh, Bruce Franca and the undersigned, all of NAB, met with Commission staff to discuss ongoing issues with the Commission's Television White Spaces (TVWS rules). FCC attendees are listed below.

The Commission should either amend its current Television White Spaces (TVWS) rules to make those rules effective and enforceable, or it should eliminate those rules and abandon the failed TVWS experiment. The Commission's current approach – allowing TVWS operations in the face of the documented failure of its rules and ongoing noncompliance with those rules – is incoherent.

Nearly two years ago, the National Association of Broadcasters filed a petition for rulemaking asking the Commission to amend its TVWS rules to eliminate the so-called "professional installation" option for determining the location of fixed TVWS devices.¹ Since that time, NAB has repeatedly demonstrated the insufficiency of professional installation as a method for accurately determining the location of TVWS devices.² To this day, the TVWS database continues to reflect errors and inaccuracies.³

¹ Emergency Motion for Suspension of Operations and Petition for Rulemaking, RM-11745 (March 19, 2015).

² See, e.g., Letter from Patrick McFadden to Marlene H. Dortch, RM-11745, ET Docket No. 14-165 (June 25, 2015); Letter from Patrick McFadden to Marlene H. Dortch, ET Docket No. 16-56 (July 15, 2016).

³ Attachment.

The Commission's inaction on this matter is perplexing, particularly because the Commission's own staff itself helped broker the solution. Exactly 16 months ago, NAB, together with TVWS manufacturers responsible for the vast majority of TVWS devices currently available, submitted a compromise proposal to eliminate location accuracy issues NAB identified by requiring fixed TVWS devices to incorporate an automatic geolocation capability or be under the control of a device with such capability.⁴ Finally, more than seven months after these parties submitted a solution based on the urging of Commission staff, the Commission issued a brief Notice of Proposed Rulemaking that would amend the Commission's rules to reflect this cross-industry compromise.⁵

Nearly nine months have passed since the released of that NPRM, yet Commission staff have told NAB they do not believe an order will be forthcoming until the next administration. The Commission should act expeditiously to resolve this matter rather than allowing a well-documented problem to continue to fester. If the Commission has not yet acted because only a handful of TVWS devices are currently operating years after the current rules were enacted and the Commission considers TVWS operations so trivial as to be irrelevant, the Commission should simply eliminate its rules permitting such operations.

Similarly, the Commission currently has in place fast approaching deadlines for compliance with rules which TVWS device manufacturers and database providers do not appear prepared to meet. On August 6, 2015, the Commission amended its rules to require, among other things, that TVWS database administrators have the capability to "push" updated available channel lists to white spaces devices and that TVWS devices have the ability to accept these updated channel lists.⁶ For the avoidance of doubt, the Office of Engineering and Technology (OET) issued guidance regarding compliance with these rules. That guidance plainly states, "All [TVWS] devices imported and marketed after September 23, 2016, must

⁴ Letter from Haiyun Tang, Adaptrum, Inc.; James Carlson, Carlson Wireless Technologies, Inc.; Larry W. Koos, Koos Technical Services, Inc.; Jordan Du Val, MELD Technology, Inc.; and Rick Kaplan, National Association of Broadcasters, to Julius P. Knapp, Chief, Office of Engineering and Technology, RM-11745 (filed Jul. 17, 2015).

⁵ *Amendment of Part 15 of the Commission's Rules for Unlicensed White Space Devices*, Notice of Proposed Rulemaking and Order, 31 FCC Rcd 1657 (Feb. 26, 2016).

⁶ *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, and Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600 MHz Duplex Gap; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 30 FCC Rcd 9551, ¶ 280 (2015).

comply with the ‘push’ notification.”⁷ To date, no TVWS device complies with the Commission’s push notification requirement, yet TVWS device manufacturers continue to market non-compliant devices.

The OET guidance also provides that any device “that does not comply with the ‘push’ notification must cease operation after December 23, 2016.”⁸ There are currently no industry standards for implementing the push notification requirement and, to NAB’s knowledge, TVWS database administrators and TVWS device manufacturers have taken no steps to comply with this requirement. In the event that TVWS database administrators and TVWS device manufacturers are not in compliance with these rules by the Commission’s rapidly approaching deadline, the Commission should not wait two years to take action.

NAB has sought to enable spectrum sharing in broadcast spectrum as long as such sharing is based upon policies and procedures that reliably prevent interference. We have identified serious issues with the TVWS database and at the Commission’s urging worked with the TVWS industry to develop a viable solution to those issues. The Commission should either adopt and enforce effective rules that will allow TVWS devices to coexist with licensed operations, or it should eliminate or suspend TVWS operations.

Respectfully Submitted,



Patrick McFadden
Associate General Counsel,
National Association of Broadcasters

cc: Julius Knapp
Ira Keltz
Matthew Hussey
Hugh Van Tuyl
Paul Murray
Jamison Prime
Chris Gao

⁷ FCC, Office of Engineering and Technology, “Certification Test Procedures For White Space Devices Authorized Under Subpart H of the Part 15 Rules,” 10 (Dec. 22, 2015) available at: https://apps.fcc.gov/kdb/GetAttachment.html?id=f7UKqx6KQJuTNdIY31S4wg%3D%3D&desc=416721%20D01%20White%20Space%20Test%20Procedures%20v03&tracking_number=50929

⁸ *Id.*



TV White Space Database Discussion

November 16, 2016

Two Issues for Discussion

- TVWS Database Accuracy
 - Despite FCC efforts database still contains numerous errors and false entries
 - FCC should either amend its “push” notification order to make it work or adopt NAB’s and TVWS device manufacturers’ solution
- Google’s Fast Polling Channels Proposal
 - Why this proposal simply doesn’t work

TVWS Database

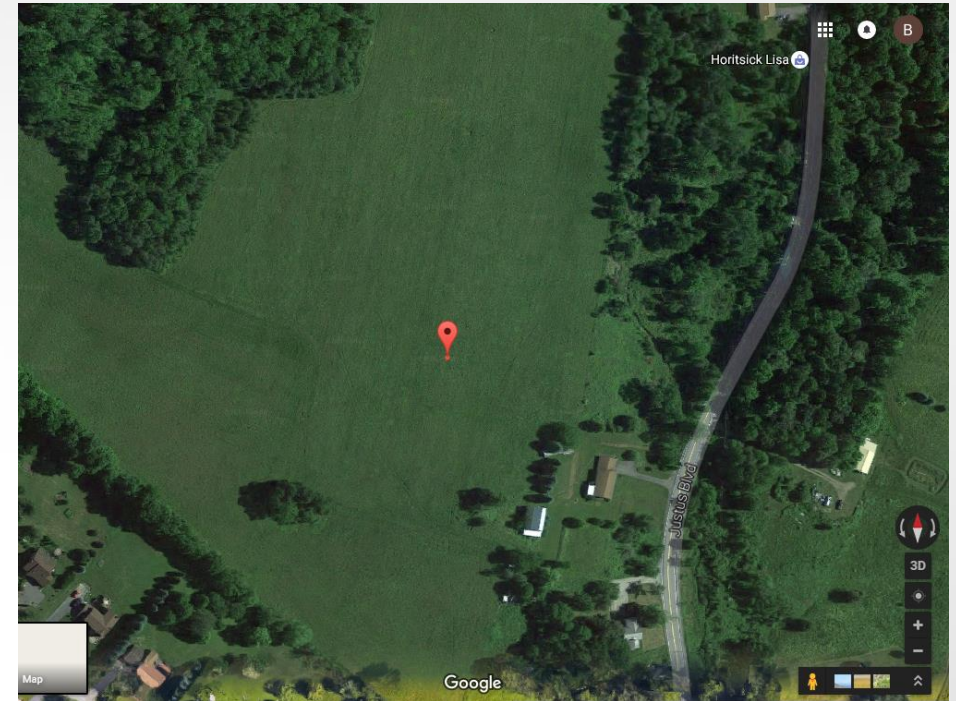
- NAB reviewed and identified problems with November 1, 2016 TVWS database
 - 87 TVWS devices (13% of all devices) are registered in database are listed as “test” entries
- No provision in TVWS rules or Part 15 for “test” entries
 - False locations of devices and other incorrect data can’t be justified by simply adding “test” to registration information
 - A number of devices registered to other parties list same location as one or more “test” locations
 - These locations have been pointed out in previous NAB filings as obviously false locations

Some “Test” Examples

160721SPBR0000022	SPBR	OPA-RC2-CPE	7793c022-4335-4963-8774-7b0d1d73159d	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000023	SPBR	OPA-RC2-CPE	f95bdd04-236c-45d7-82a4-11def57a6f5c	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000024	SPBR	OPA-RC2-CPE	97c810ae-7b04-4ec9-9360-c88e98675ef8	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000025	SPBR	OPA-RC2-CPE	c91655b4-cffb-44bf-a4e1-a90a1ec277ea	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000026	SPBR	OPA-RC2-CPE	cdd94fa4-b00a-4ce3-b423-922c19a6df37	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000027	SPBR	OPA-RC2-CPE	cd5cc4ea-fd18-4b39-8dfb-c21bf516ab60	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000028	SPBR	OPA-RC2-CPE	55219488-c979-42fe-afbe-4a6557fe6aba	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000029	SPBR	OPA-RC2-CPE	7ff82bd7-db2a-49ee-ad76-839423e0308d	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000013	SPBR	OPA-RC2-CPE	cec1e3d1-d38d-4d19-a6ab-e381c1ab8f60	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000016	SPBR	OPA-RC2-CPE	75dae9c6-4110-4907-984a-617e67b68fb5	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
160721SPBR0000019	SPBR	OPA-RC2-CPE	1d0c6f5e-6ba6-4cdc-b2fb-3243447c5d5e	40.77883	-86.1285	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
140129SPBR0000001	SPBR	OPA-RC2-BS	8da5738e-8796-4357-9f3c-5616ea3051f9	40.77945	-86.1284	30 Carlson Wireless Technologies - TEST	Carlson Technical Support
160708SPBR0000003	SPBR	OPA-RC2-CPE	12b13c83-603b-46a9-aeac-fad74be913e9	40.7829	-124.116	8 Carlson Wireless Technologies - TEST	Carlson Technical Support
140620SPBR0000004	SPBR	OPA-RC2-CPE	fb21ec6-e5e3-46a9-8541-5f7790518791	40.88386	-124.105	4 Carlson Wireless Technologies - TEST	Carlson Technical Support
140914SPBR0000001	SPBR	OPA-RC2-CPE	5f99d52b-5232-4ed8-95e1-ae486423a51	40.88386	-124.105	10 Carlson Wireless Technologies - TEST	Carlson Technical Support
160708SPBR0000001	SPBR	OPA-RC2-BS	31eb28d4-247c-4f48-b3e9-42bf3e08eca7	40.88386	-124.105	10 Carlson Wireless Technologies - TEST	Carlson Technical Support
160629SPBR0000001	SPBR	OPA-RC2-BS	8423f423-9ab2-462f-b688-1e275079a866	40.88386	-124.105	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
140607SPBR0000001	SPBR	OPA-RC2-CPE	c9608427-8557-4eee-84fb-b35a2c56467d	40.88386	-124.105	3 Carlson Wireless Technologies - TEST	Carlson Technical Support
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140827SPBR0000039	SPBR	OPA-RC2-CPE	b4eba34e-a25e-43a7-82f9-a00370e1ac16	40.88386	-124.105	1 Carlson Wireless Technologies - TEST	Carlson Technical Support
160708SPBR0000004	SPBR	OPA-RC2-CPE	661ce850-c6fb-406d-a537-25bd10641e80	40.89183	-124.087	2 Carlson Wireless Technologies - TEST	Carlson Technical Support
160708SPBR0000002	SPBR	OPA-RC2-CPE	536a58b6-a087-4c18-88e7-93c69456df32	40.90155	-124.077	4 Carlson Wireless Technologies - TEST	Carlson Technical Support

Scranton Example

- Devices registered to other parties also list some of the same locations as “test” locations
- For example, 21 devices are registered at the same exact location (41.50809, -75.6433) shown on the right
 - 1 device registered to Brandon Wigfield
 - 1 device registered to “edu”
 - 2 devices registered to Mid-Atlantic Broadband of Boston, VA
 - 17 devices registered to “Adaptrum Lab Test”

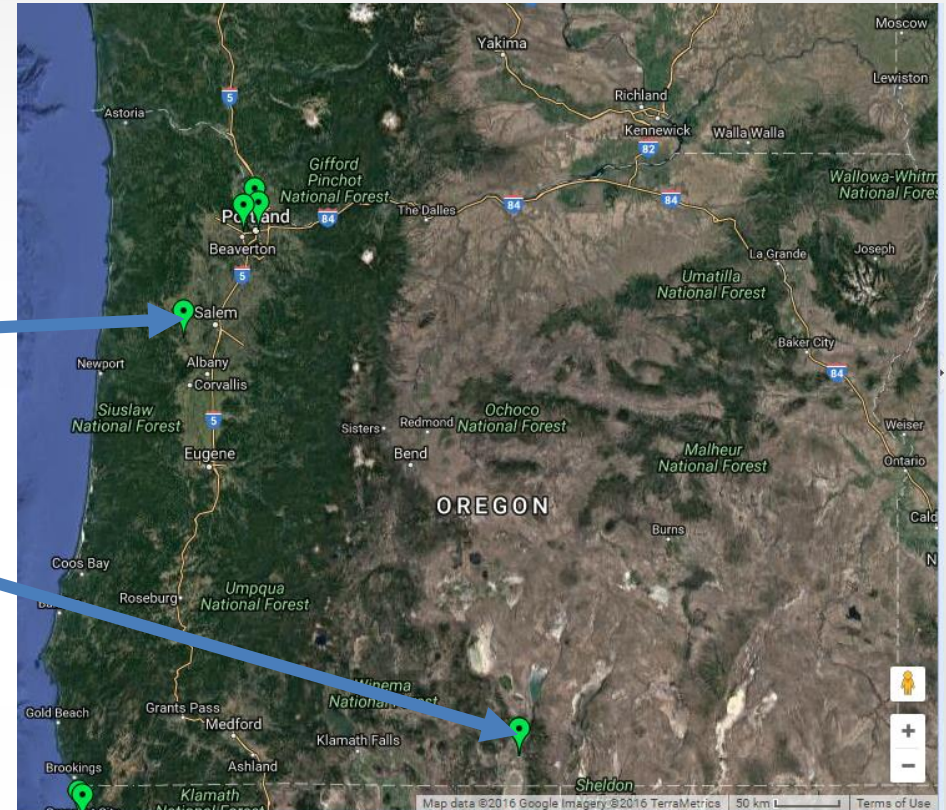


TVWS Database

- Database continues to contain obviously incorrect information
 - 3 devices list “edu” as owner and contact name
 - 2 devices list “org” as owner and contact name
 - 1 device lists “usa” as owner and contact name
 - 1 device lists “LAB” as owner and contact name
- Large number of TVWS devices are listed as operating at same *exact location* and *antenna height* as other devices – *Some examples are:*
 - Ten devices registered to CK Wireless at 31.92098, -95.2976
 - Seven devices registered to Mid Atlantic at 36.88819, -78.5674
 - Ten devices registered to Intermax at 47.74027, -116.794

TVWS Database

- TVWS devices are registered to locations that are beyond communication range to other devices (See two Oregon examples on right)
- Database contains other similar examples

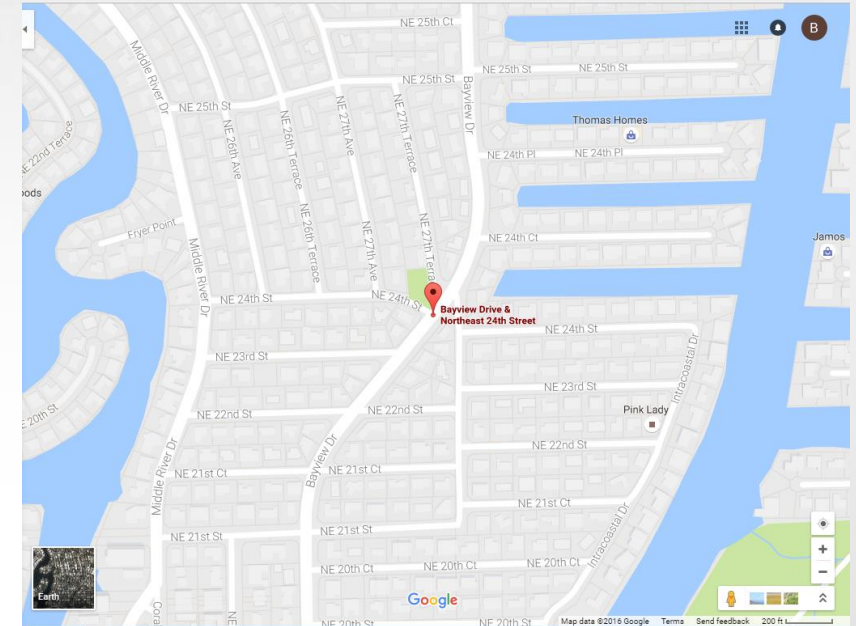


Google “Fast Polling” Approach

- Google argues subjecting all channels to 20-minute requirement is “unreasonably burdensome” and contrary to FCC policy
 - Previous two reserve wireless microphone channel rules applied to all unused TV channels
 - Licensed wireless microphone users could “reserve” any channel
 - Adopted FCC “push” requirement would apply to all channels
- More importantly, Google’s proposed fast polling approach simply doesn’t work and wouldn’t protect licensed microphone operation
- Google would have devices check only lowest two available channels at the device location

Fast Polling and Wireless Mics Operate on Different Channels

- Google would have TVWS devices check only lowest two available channels at the TVWS device location
- TVWS device location is not the same as wireless microphone location
- Fast Polling could occur on different channels than wireless microphone operation
- Ft. Lauderdale example:
 - According to the TVWS database a wireless microphone at Bayview Drive and NE 24th could operate on channels 25 and 26
 - However, a TVWS device at Bayview Drive and NE 25th Street would only “fast poll” on channels 24 and 25 and could continue to operate on channel 26 causing interference to licensed wireless microphones operating a block away (well within the 1 km interference zone under the rules)
 - Similar situations would occur throughout the country



Solutions

- Adopt NAB/TVWS manufacturers solution for geolocation
- Adopt 20 minute database check or fix FCC “push” requirement
- Amend TVWS database to include missing information needed for interference calculations
 - Transmitter power
 - Antenna info and gain